

Problem E: Martian DNA

Filename: `martian`

Time limit: 1 second

It turns out that Martian DNA uses four nucleotide bases that are abbreviated as A, B, C and D. But the rules for how they are put together are different than the rules for human DNA from Earth. Most strings of DNA are allowed, but no letter is allowed to repeat, so no Martian DNA has the substring "AA", "BB", "CC" or "DD". In addition, the substring "AB" is not allowed. Apparently if this were to appear, all life on Mars would come to a halt immediately.

The Problem

You are curious, if a creature on Mars has n letters in its DNA code, exactly how many different genetic codes (strings of length n that don't contain the substrings "AA", "BB", "CC", "DD" and "AB") could that creature have?

The Input

The first line contains an integer c , the number of test cases. The test cases follow, one per line. Each case will contain a single positive, integer, n , representing the input for the test case.

The Output

For each test case, output a single integer: the number of valid DNA strings of length n modulo $10^9 + 7$.

Input Bounds and Corresponding Credit

30 Points	70 Points
<ul style="list-style-type: none">• $1 \leq c \leq 10$• $1 \leq n \leq 10$	<ul style="list-style-type: none">• $1 \leq c \leq 10000$• $1 \leq n \leq 10^5$

Samples

Input	Output
2	11
2	30
3	